

Appl. No. 09/488,945
Amdt. Dated 08/08/2005
Reply to Office Action of 5/9/2005

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1-17. (Cancelled.)

18. (Currently Amended) A switch comprising:

a plurality of ports including (i) a first plurality of ports adapted for coupling to a plurality of devices, including a source device being a member of a first network and a destination device being a member of a second network, and (ii) a second plurality of ports ~~directly~~-coupled to a router so that the switch is interposed between the router and the plurality of devices; and

a mechanism to determine, using layer three (L3) information contained in a packet received by a source port of the plurality of ports, which one of the plurality of ports is coupled to the destination device and to transfer information contained in the packet to the destination device without use of a routing function, the mechanism further generates a data structure including layer two (L2) addresses and corresponding layer three (L3) addresses associated with the destination device before transferring information to the destination device, the data structure being populated based on prior communications with the router.

19. (Cancelled.)

20. (Original) The switch of claim 18, wherein the mechanism analyzes data transmitted between the router and the destination device.

21. (Original) The switch of claim 20, wherein the data is packetized in accordance with an Address Resolution Protocol.

22. (Currently Amended) The switch of claim 18, wherein the second plurality of ports are directly coupled to the router so that there are no interceding devices or local area

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~~networks between the switch and the router mechanism generates a data structure including layer two (L2) addresses and corresponding layer three (L3) addresses associated with the destination device prior to transferring information to the destination device.~~

23. (Previously Presented) The switch of claim 18, wherein the destination device includes a server associated with the first network of being a virtual local area network of at least two virtual local area networks.

24. (Currently Amended) A switch comprising:
a plurality of ports adapted for coupling together a plurality of virtual local area networks being at least three virtual local area networks, at least one of the plurality of ports is directly coupled to a router so that there are no interceding devices or local area networks between the switch and the router; and

a mechanism to (a) analyze information transferred from a source device of a first virtual local area network to a destination device of a second virtual local area network, (b) store information identifying a port coupled to the second virtual local area network, a layer two (L2) address of the destination device and a layer three (L3) address of the destination device corresponding to the L2 address, and (c) using the information to forward data between the plurality of virtual local area networks, the stored information forming a table that is populated based on prior communications with the router.

25. (Original) The switch of claim 24, wherein the information is obtained from packets configured in accordance with an Address Resolution Protocol.

26. (Original) The switch of claim 24, wherein the mechanism uses the information by (i) determining both the L2 address of the destination device and the port coupled to the second network based on the L3 address of the destination device supplied by the source device, and (ii) setting a destination of packets of the data to the L2 address of the destination device.

27. (Cancelled.)

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28. (Currently Amended) A network comprising:
a destination device of a first network;
a source device of a second network;
a router; and
a switch having a plurality of ports supporting communications to the destination device and operating transparently to the destination device, the source device and the router, the source device and the router with one of the plurality of ports directly coupled to the router so that there are no interceding devices or local area networks between the switch and the router, the switch including software to determine, using layer three (L3) information contained in a packet received by a first port coupled to the source device, which one of the plurality of ports is coupled to the destination device, to produce a table including layer two (L2) addresses and corresponding layer three (L3) addresses associated with the destination device having been learned from prior communications with the router and to transfer information contained in the packet from the source device directed to the destination device without use of a routing function.

29. (Previously Presented) The network of claim 28, wherein the first network is separate and distinct from the second network and the switch is remotely located from the router.

30-36. (Cancelled.)

37. (Currently Amended) For use in transferring data from a first virtual local area network (VLAN) to a second virtual local area network (VLAN) via a switch directly coupled to a router and interposed between the router and the first and second virtual local area networks without assistance by the router, the method comprising:

(a) receiving a data packet by the switch, the data packet originating from a source device associated with the first virtual local area network and including a layer three (L3) address of a destination device of the second virtual local area network;

(b) determining the L2 address associated with the L3 address of the destination device through access of one or more data structures within the switch and a port of the switch to which

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the destination device associated with the L3 address is attached, the data structure being populated based on prior communications with the router; and

(c) setting a destination address of the data packet to the L2 address,

wherein the operations (a), (b) and (c) are conducted transparent to devices involved in the inter-VLAN communications between the first VLAN and the second VLAN including the source device, the destination device and the router.

38-43. (Cancelled.)

44. (Previously Presented) The switch of claim 18, wherein the source port is coupled to the first network being a virtual local area network.

45. (Currently Amended) The switch of claim 18 [[22]], wherein the data structure is a table.

46. (Previously Presented) The switch of claim 45 operating transparent to the source device, the destination device and the router.

47. (Previously Presented) The switch of claim 45, wherein the second virtual local area network is different from the first virtual local area network.

48. (Previously Presented) The switch of claim 18, wherein a lack of usage of the routing function is a lack of use of a routing protocol.

49. (Previously Presented) The network of claim 28, wherein a lack of usage of the routing function is a lack of use of a routing protocol.

50. (Previously Presented) The method of claim 37, wherein the one or more data structures is a table.

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51. (Previously Presented) The method of claim 37 further comprising sending the data packet to the destination device.

52. (Cancelled.)

53. (Currently Amended) Directly coupled to a router without any interceding devices or any local area networks and in communication with a destination device, a switch comprising:

a plurality of ports including a first plurality of ports adapted for communication with a plurality of devices including the destination device, the first plurality of ports being associated with at least two virtual local area networks; and

a mechanism to utilize a data structure including layer two (L2) information and corresponding layer three (L3) information associated with the destination device, the data structure being populated based on prior communications with the router and accessed to determine which one of the plurality of ports is coupled to the destination device and to send information contained in the packet to the destination device with the L2 information in the packet unchanged in order to reduce traffic on the router.

54. (Previously Presented) The switch of claim 53, wherein the plurality of ports further includes a second plurality of ports coupled to the router.

55. (Previously Presented) The switch of claim 53, wherein the mechanism further analyzes data transmitted between the router and the destination device.

56. (Previously Presented) The switch of claim 55, wherein the data is packetized in accordance with an Address Resolution Protocol.

57. (Previously Presented) The switch of claim 53 being physically removed from the router.

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58. (Previously Presented) The switch of claim 53, wherein the data structure is a table.

59. (Cancelled.)

60. (Currently Amended) A switch comprising:

an input comprises a plurality of ports including a first plurality of ports being adapted for communication with a plurality of devices including a destination device and a second plurality of ports being adapted for direct coupling to a router so that there are no interceding devices or local area networks between the switch and the router and the switch is interposed between the plurality of devices and the router, the plurality of ports being associated with at least three virtual local area networks; and

a mechanism to determine, using layer three (L3) information contained in a packet received over the input, how the destination device is coupled to the input and to transfer information contained in the packet to the destination device without use of a routing protocol.

61. (Previously Presented) The switch of claim 60, wherein the mechanism analyzes data transmitted between the router and the destination device.

62. (Previously Presented) The switch of claim 61, wherein the data is formatted in accordance with an Address Resolution Protocol.

63. (Previously Presented) The switch of claim 60 being physically removed from the router and operating transparent to the router and the plurality of devices.

64. (Currently Amended) ~~Directly-Ce~~coupled to a router and in communication with a destination device, a switch comprising:

a table configured to contain layer two (L2) addresses and corresponding layer three (L3) addresses associated with multiple destination devices and populated based on prior communications with the router; and

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logic to populate the table based on information received from the router during initial communications with the destination device and, for communications after the initial communications, to utilize the table to obtain an L2 address for the destination device for forwarding incoming information to the destination device without accessing the router.

65. (Previously Presented) The switch of claim 64, wherein the initial communication includes a query in accordance with an Address Resolution Protocol.

66. (Previously Presented) The switch of claim 64, wherein the data structure is a table.

67-70. (Cancelled).

71. (Currently Amended) A method comprising:

(a) storing a layer three (L3) address and a layer two (L2) address corresponding to the L3 address in a table accessible by a switch;

(b) forwarding a packet to a destination device placed on a first virtual local area network with the packet being processed by the switch if an L3 address of the destination device of the packet matches an L3 address in the data structure; and

(c) communicating the packet to a router directly coupled to the switch with no interceding devices or local area networks between the switch and the router if the L3 address of the destination device does not match any L3 address in the table,

wherein the switch is implemented to intercept the packet directed to the router.

72. (Previously Presented) The method of claim 71, wherein the string of the L3 address and the corresponding L2 address is in a table contained in the switch.

73. (Previously Presented) The method of claim 72, wherein prior to forwarding of the packet, the method further comprises receiving the packet from a source device by the switch, the source device being placed on a second virtual local area network.

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74. (Previously Presented) The method of claim 73, wherein the source device and the destination device are placed in different virtual local area networks, and the operations (a), (b) and (c) are conducted transparent to the router and the destination device

75. (Previously Presented) The method of claim 72, wherein the operations (a), (b) and (c) are conducted transparent to the router and the destination device.

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